BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, DC 20554

In the Matter of	)	
	)	
Review of the Commission's Rules	)	WT Docket No. 17-200
Governing the 896-901/935-940 MHz	)	
Band	)	

To: The Commission

COMMENTS OF LOWER COLORADO RIVER AUTHORITY

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Summary

Existing 900 MHz narrowband communications systems that support critical utility operations must be allowed to continue to operate at their current levels of reliability within the incumbent's service territory, must have the ability to expand to meet growing utility coverage and capacity needs, and must be protected against harmful interference from any broadband operations allowed in the band.

LCRA's existing narrowband system would not fit within the proposed 2/2 MHz narrowband allocation and would suffer harmful interference if forced to relocate to the compressed narrowband segments. LCRA would incur significant costs to relocate to the new, smaller narrowband segments and to respond to instances of harmful interference that would occur post-relocation.

In the event the Commission decides to implement a band realignment, "complex" B/ILT narrowband systems that cannot be accommodated in the proposed narrowband segments must be excluded from any mandatory relocation. The Commission should require that the prospective broadband provider obtain consent from the incumbent complex system licensee before obtaining a license to deploy broadband operations. Likewise, the Commission should not issue a broadband license in any county where a complex narrowband system is present without the voluntary agreement by such complex narrowband licensee.

The Commission should adopt a definition of "complex" systems that includes three options: (1) any system with 25 or more integrated 900 MHz sites; (2) any system that is shared by the B/ILT licensee with public safety users or other eligible entities pursuant to Section 90.179 of the Commission's rules, or (3) any system that is authorized for an extended implementation period pursuant to Section 90.629 of the Commission's rules. Any site-threshold

for complex systems that is limited to those with more than 25 sites would artificially exclude systems with many fewer sites that are extremely complex to design, install, and operate. For those systems that do not meet the numerical threshold for a complex system, the Commission should consider other factors, such as whether the system is shared with other users or authorized for an extended implementation period. Restricting eligibility to only a specific number of sites would artificially restrict deserving systems and lead to many requests for waivers that would impose administrative burdens and costs for the FCC and all licensees. LCRA's proposed definition would apply to only the most complex systems and accomplish the Commission's overarching policy goals for the 900 MHz band. In those areas with a complex narrowband system, the Commission should lift the freeze on 900 MHz license applications to enable complex system licensees to apply for new sites or modify existing sites to expand their systems.

Furthermore, any relocation and transition to broadband services must be truly voluntary and flexible. If the Commission proceeds with a voluntary relocation process, all licensees, including site-based B/ILT licensees, should be eligible to obtain a broadband license using a combination of 900 MHz spectrum for private internal purposes. LCRA recommends that the Commission designate the 900 MHz broadband service under Part 90 of its rules instead of Part 27, designate the new broadband segment beginning at 896 MHz with a guard band between the broadband and narrowband segments, limit eligibility for the newly designated narrowband segments to B/ILT entities, implement geographic area licensing for the broadband segment based on counties, and adopt other technical rules as discussed herein.

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Lower Colorado River Authority ("LCRA") hereby submits its comments in response to the Federal Communications Commission's ("FCC" or "Commission") *Notice of Proposed Rulemaking* to realign the 896-901/935-940 MHz band ("900 MHz band") to create a broadband segment and to reserve the remainder of the 900 MHz band for continued narrowband operations.[1]

LCRA is a Texas conservation and reclamation district that provides many vital services to Texans, including delivering electricity, managing the water supply and environment of the lower Colorado River basin, providing public recreation areas, and supporting community development. LCRA supplies wholesale electricity to 34 Texas retail utilities, including cities and electric cooperatives that serve more than one million people in 55 counties. LCRA is a steward of the Colorado River and provides water for more than one million people, businesses,

[1] *Review of the Commission's Rules Governing the 896-901/935-940 MHz Band*, Notice of Proposed Rulemaking, WT Docket No. 17-200, FCC 19-19 (rel. March 14, 2019) ("*900 MHz NPRM*"). The Commission published a notice in the Federal Register correcting the comment date to June 3, 2019. *See* 84 Fed. Reg. 14641.

and industries in the lower Colorado River basin in Texas. LCRA operates six dams on the Colorado River that create the Highland Lakes and, through these dams, manages floodwater and produces hydroelectric power. LCRA manages over 30 parks, recreation areas and natural resource areas. LCRA's affiliate, LCRA Transmission Services Corporation, owns or operates about 5,200 miles of transmission lines and owns, operates, or provides services at nearly 400 substations.

LCRA has previously explained how it operates a narrowband 900 MHz land mobile radio system throughout central Texas for emergency and daily voice communications and mission-critical utility operations and how it allows non-profit, shared use of its 900 MHz system pursuant to Section 90.179 of the Commission's rules with other utility generation, transmission and distribution companies, and public safety entities, such as police, fire, EMS, emergency management, school districts, transit authorities, and flood management and warning systems.[2] LCRA has also addressed how it utilized its 900 MHz narrowband channels to monitor river conditions and flooding during Hurricane Harvey and to support public safety operations and restoration efforts.[3]

With more than 65 radio tower sites strategically located within LCRA's service territory, LCRA's 900 MHz radio system covers 61 counties and almost 50,000 square miles. LCRA's 900 MHz radio coverage reaches from McCulloch, Menard, and Sutton counties to Goliad and Matagorda counties along the Gulf Coast. More than 8,800 mobile radio users rely on the LCRA system for their daily communications. LCRA also operates a 700 MHz P25 network reserved

[2] LCRA Notice of Inquiry Comments, WT Docket No. 17-200 (filed Oct. 2, 2017) ("*LCRA NOI Comments*"); *See also* LCRA Notice of Inquiry Reply Comments, WT Docket No. 17-200 (filed Nov. 1, 2017) ("*LCRA NOI Reply Comments*").

[3] *LCRA NOI Comments* at 4.

for public safety and first responder organizations and communities throughout Central Texas, which is integrated with the 900 MHz system.

I. The Commission Should Carve-Out Complex Narrowband Systems From Any Mandatory Relocation

A. Complex Narrowband Systems Such as the LCRA System Would Not Fit Within a 2/2 MHz Segment

As a complex system, LCRA's existing narrowband system would not fit within the new 2/2 MHz narrowband segments proposed by the Commission and should not be subject to mandatory relocation. LCRA is currently licensed for more unique frequencies than what would be supported in the proposed 2/2 MHz band. LCRA holds licenses for over 180 distinct frequencies in the 900 MHz band, while the proposed 2/2 MHz segments would only support 160 unique frequencies. Because of changes to the interference threshold resulting from the new broadband operations, LCRA would need even more channels than it currently holds to operate near its existing levels of reliability.

NextEra Energy, Inc. ("NextEra"), the parent company of Florida Power & Light ("FP&L"), submitted a spectrum engineering report by the Harris Corporation that demonstrated that the proposed 2/2 MHz narrowband allocation is not sufficient for the current and future needs of many 900 MHz incumbent systems.[4] The Harris Corporation's spectrum engineering report provides a compelling technical analysis regarding the impact on FP&L's 900 MHz system, which is very comparable to LCRA's system. The Harris Corporation's spectrum engineering report found that the proposal for deploying a high density cellular network into the

[4] Letter from Bryan N. Tramont and Timothy J. Cooney, Counsel to NextEra, to Marlene H. Dortch, Secretary, Federal Communications Commission, WT Docket No. 17-200, Attachment "A Study of Issues: Concerning a Proposed Broadband Allocation Within the 900 MHz Land Mobile Radio Band and Its Potential Impact on the Florida Power & Light Network" prepared by the Harris Corporation (filed Sept. 21, 2018) ("*NextEra Sept. 21, 2018 Ex Parte Letter*").

900 MHz spectrum, while leaving less than 1.85 MHz of residual bandwidth for continuing narrowband operations, would challenge the ability of many incumbents to re-use 900 MHz narrowband channels, would result in reduced coverage for existing narrowband systems due to the closer spacing of transmitter carriers and interference caused by LTE sites, and would limit the potential growth of incumbent systems.[5] LCRA concurs with these findings. Based on the technical analysis provided in the Harris Corporation's spectrum engineering report, LCRA's current channel quantity and site density cannot be accommodated within a 2/2 MHz narrowband segment and there would be no room for expansion.

As LCRA has previously explained, LCRA co-locates a high number of channels at each site which combine to share antenna systems. Combiners are used to collect the signals of multiple channels into a single antenna system, which is necessary for cost and structural reasons. LCRA's standard combiners require a minimum channel spacing of 250 kHz between channels and the close-spacing combiners require a minimum of 150 kHz spacing between channels. If the bare minimum combiner spacing of 150 kHz is used for all channels in the system, there would be 26 sets of six frequencies for use in the proposed 2/2 MHz narrowband segments and it would require new combiners at over 80 percent of LCRA's 900 MHz sites. LCRA has approximately 30 sites within a 65-mile radius of Austin, Texas, many of which utilize more than six channels each. Under the realignment plan, LCRA alone would effectively be using all the available 150 kHz spaced channels in this area. As such, it would not be possible for LCRA's existing channel quantity and site density to be accommodated in the proposed 2/2 MHz narrowband segments.

[5] *Id.*, Attachment at 5-22.

LCRA's existing narrowband system would experience significant harmful interference if forced to relocate its operations to the proposed 2/2 MHz segments. Without a guard band between the broadband and narrowband operations, interference from a broadband licensee would potentially disrupt LCRA's entire system. LCRA's system is designed to operate above -109 dBm. Any interference above this threshold directly reduces the established coverage of the system. Signals below -109 dBm can also be detrimental to LCRA's system due to the Signal to Noise ratio required for reliable communications. If a broadband licensee can operate without a guard band and emits wide-band signal exceeding -109 dBm, then LCRA's service will be degraded. LCRA recommends the Commission adopt protection levels similar to the protection levels afforded to 800 MHz band systems of -104 dBm for mobiles and -101 dBm for portables, which would be appropriate for protecting critical infrastructure utility systems.[6]

Because LCRA would be receiving interference from a wideband system, which is much different than localized narrowband interference, there would be no way for LCRA to tune away or filter the channel interference. Traditionally, interference to a B/ILT system from narrowband operations can often be tuned away or filtered. However, interference from wideband operations, combined with the lack of a guard band, will result in a far more degraded experience for LCRA's system and will render the newly consolidated 2/2 MHz narrowband segments unusable for LCRA and its public safety users. The interference would be constant and could not be averted through tuning. The reconfigured 900 MHz band would lead to increased interference, unreliability and reduced system coverage for LCRA's narrowband system.

LCRA operates and is expanding its utility facilities in rural areas where there often is a lack of reliable cellular coverage. LCRA's 900 MHz radio system is therefore the primary

[6] 47 C.F.R. § 90.672.

means of communication for its employees to safely and reliably construct, operate and maintain transmission lines and substations, conduct public safety operations, and perform flood management in these areas. LCRA's employees rely on their 900 MHz radios for coordination and communication with LCRA's control center, for communication during ongoing patrol and maintenance of the transmission system, and for reliable communications necessary to safely and quickly de-energize facilities either for planned work or in the event of a maintenance emergency situation. As such, any interference to LCRA's 900 MHz narrowband operations from a 900 MHz broadband system would have a devastating effect on LCRA's 900 MHz radio system that is necessary for mission-critical communications to meet the needs of LCRA's utility operations and its public safety users. LCRA would not be able to obtain the adequate and reliable radio coverage required to ensure the safety of its employees and to respond to issues with its utility transmission system.

Even aside from the issues regarding LCRA's inability to fit within the proposed 2/2 MHz narrowband segments and the increased interference to LCRA's narrowband operations, the Commission has not adequately addressed the exorbitant costs that LCRA and other incumbent licensees with complex systems would incur to relocate to the new, smaller narrowband segments and to respond to instances of harmful interference that would occur post-relocation.

NextEra submitted a cost-benefit analysis prepared by the Brattle Group demonstrating that the transition costs to realign FP&L's 900 MHz system and ongoing operational costs would be substantial.[7] The Brattle Group cost-benefit analysis described the one-time costs associated

[7] Letter from Bryan N. Tramont and Timothy J. Cooney, Counsel to NextEra, to Marlene H. Dortch, Secretary, Federal Communications Commission, WT Docket No. 17-200, Attachment

with transitioning the band to create a 3/3 MHz broadband segment and a 2/2 MHz narrowband segment and the ongoing operational costs FP&L would incur if its operations were restricted to the 2/2 MHz narrowband segment. Under the Brattle Group cost-benefit analysis, FP&L estimated approximately $62 million in one-time transition costs from adding 45 new sites to FP&L's existing system and updating existing sites[8] and ongoing costs of up to approximately $35 million associated with having to operate new leased sites and increase staffing.[9]

FP&L also submitted an engineering report that explored the technical and cost impact issues of realigning the 900 MHz band.[10] This engineering report explained that to limit co-channel interference, narrowband systems will need to reduce power and use short-space design techniques that will require an increase in the number of base stations to provide comparable coverage.[11] This engineering report indicated that compacting incumbent systems into the new, smaller narrowband segment will cause increased costs, including costs associated with system and site engineering, frequency coordination and re-use planning, licensing, construction and leasing costs for antenna support structures, antenna and transmission lines, equipment shelters and base station or receiver equipment, backhaul requirements, as well as ongoing operation and maintenance costs associated with the additional sites and backhaul.[12]

"The Economics of the 900 MHz Rebanding Proposal A Cost-Benefit Analysis" prepared by the Brattle Group (filed Sept. 14, 2018) ("*NextEra Sept. 14, 2018 Ex Parte Letter*").

[8] *Id*. Attachment at 29-31.

[9] *Id.* Attachment at 31-32.

[10] *NextEra Sept. 21, 2018 Ex Parte Letter*, Attachment "900 MHz NOI Proposed Rebanding Engineering Report 900 MHz LMR Spectrum Issues with Repurposing" prepared by Gillespie, Prudhon & Associates, Inc.

[11] *Id*. Attachment at 10.

[12] *Id*. Attachment at 23-4.

As part of any relocation – whether voluntary or mandatory – the Commission must make clear that the prospective broadband licensee will be responsible for fully reimbursing site-based licensees for all costs they may incur in relocating to the new narrowband system and for ongoing operation and maintenance costs, including costs incurred to resolve interference that does occur post-relocation. While the Commission suggests that relocation costs may be relatively low, and that relocation may only contemplate retuning and additional antennas to alleviate interference that may occur after incumbents are relocated, the cost-benefit analysis and engineering reports submitted by FP&L discussed above demonstrate that is not the case for complex 900 MHz systems. Just like FP&L, LCRA would incur significant costs associated with additional sites and channels in order to operate its system at its current reliability levels. LCRA has invested hundreds of millions of dollars over several decades to achieve the reliability levels required for its communications system, including tens of millions of dollars directly in its 900 MHz hardware, to withstand major weather events.

Because LCRA's narrowband system would be compressed into a 2/2 MHz segment of the band, LCRA would be forced to increase the number of its sites and channels to obtain coverage comparable to its current system. In order for LCRA to operate its 900 MHz system for mission critical communications and its public safety customers free from interference and with an extremely high level of reliability, LCRA will have to invest significant amounts of capital to offset the increased noise floor. LCRA will incur additional costs associated with new shelters, generators, and microwave or fiber transport, as well as additional operating and maintenance costs associated with tower construction, leases, maintaining additional hardware, and other ongoing operational costs. The Commission has not adequately considered the enormous costs that LCRA and other incumbents with complex systems will incur and whether those costs

outweigh the benefit of forcing LCRA and other incumbent licensees with complex systems to relocate their operations. As discussed above, the Brattle Group cost-benefit analysis and the FP&L engineering report demonstrate that the costs of relocating incumbent complex systems similar to those operated by LCRA would be enormous. The Commission must take these costs into account when evaluating the benefits of the proposed realignment.

For these reasons, LCRA opposes the Commission's proposal for a nationwide uniform designation of a 1.5/1.5 MHz narrowband segment (896-897.5/935-936.5 MHz) below the broadband segment and a 0.5/0.5 MHz narrowband segment (900.5-901/939.5-940 MHz) above the broadband segment. The Commission's proposal for paired 1.5 and 0.5 MHz blocks will not provide enough spectrum for LCRA's and other narrowband incumbents' complex systems to operate reliably. The proposed 1.5 and 0.5 MHz blocks will not support large, complex narrowband systems because the channel count for such systems cannot be supported within this limited allocation of channels. LCRA's inability to fit within the proposed narrowband segments provides further support for the need to exempt complex systems from any mandatory relocation mechanism adopted by the Commission.

The lack of a guard band between the broadband and narrowband segments presents another significant risk of harmful interference. While the Commission suggests that its proposal for the location of the broadband segment provides sufficient separation to avoid harmful interference from the broadband segment to certain adjacent spectrum bands, the proposed location of the broadband segment is not sufficiently spaced apart from the narrowband operations to protect site-based incumbents from interference.

B. A Carve-Out for Complex Systems Would Allow Such Systems to Continue to Operate at Current Levels of Reliability While Preserving the Opportunity for Broadband in Other Markets

If the Commission adopts its proposal to realign the 900 MHz band and decides to include a mandatory relocation mechanism, the Commission should exclude existing "complex" narrowband systems from any such mandatory relocation.[13] In those areas with an existing complex narrowband system that is excluded from mandatory relocation, the Commission should require that the prospective broadband provider obtain express consent from the incumbent complex system licensee before obtaining a license to deploy broadband operations in order to ensure that the broadband operations will not interfere with the complex narrowband system. The Commission should not issue a broadband license in any county where a complex narrowband system is present without the voluntary agreement by such complex narrowband licensee.

LCRA believes that a carve-out from mandatory relocation for complex narrowband systems, if defined properly, combined with the requirement for the prospective broadband provider to obtain express consent before obtaining a license to deploy broadband operations, could alleviate the majority of its concerns regarding the impact of a 900 MHz rebanding on its narrowband operations. It would also achieve the Commission's stated policy goal to open the 900 MHz band for additional uses while continuing to accommodate narrowband incumbents.

Contrary to the proposed definition contained in the *900 MHz NPRM*, the Commission should adopt a definition of "complex" systems that includes (1) any system with 25 or more integrated 900 MHz sites; (2) any system that is shared by the B/ILT licensee with public safety

[13] *900 MHz NPRM* at ¶ 38.

users or other eligible entities pursuant to Section 90.179;[14] or (3) any system that is authorized for an extended implementation period pursuant to Section 90.629.[15] While the Commission suggests a threshold of 65 integrated sites for purposes of defining a complex system,[16] that threshold is too high and does not consider that systems with many fewer sites can be extremely complex to design, install, and operate. The Commission does not explain how it developed its proposed 65-site threshold, which does not take into account other factors, such as whether multiple channels are licensed at each site, the amount of coverage provided from each site, the number of mobile users that rely on the system, or whether the system is shared with other users.

As discussed above, LCRA shares its 900 MHz system on a non-profit basis with other utility generation, transmission and distribution companies, and public safety entities, such as police, fire, EMS, emergency management, school districts, transit authorities, and flood management and warning systems. LCRA's network is a growing shared system that is providing critical communications to many different entities and thousands of users on a cost-shared basis, resulting in highly efficient use of the spectrum and providing public safety entities with access to state-of-the-art, wireless communications capability that would not otherwise be available. LCRA has previously explained how its system is used to monitor river and stream flood stage levels and provide life-saving warnings to the public, as well as to control community-based emergency based sirens and dispatch paging for fire-fighting units and EMS.[17] LCRA's 900 MHz narrowband system is a critical component to statewide public safety interoperability and provides the primary communications for many public safety entities.

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[14] 47 C.F.R. § 90.179.

[15] 47 C.F.R. § 90.629.

[16] *900 MHz NPRM* at ¶ 38.

[17] *LCRA Comments* at 2-3, RM-11738 (filed June 29, 2015).

The fact that LCRA's 900 MHz narrowband system is shared with other users, including public safety, undoubtedly means that it should be considered a complex system that is exempt from any mandatory relocation. LCRA does not design, install and operate its system based solely on its own needs, but must consider the needs of the public safety entities and other users that rely on the shared 900 MHz spectrum. This increases the complexity of LCRA's system and would further complicate any mandatory relocation.

PdvWireless, Inc. ("PDV") and the Enterprise Wireless Alliance ("EWA"), the proponents of the 900 MHz band realignment, have stated that they "appreciate that LCRA shares its system on a non-profit basis with Public Safety entities."[18] They further expressed that "[t]his is commendable and undoubtedly of enormous benefit to those users. However, that situation is the *exception*."[19] Thus, they are on record as acknowledging that LCRA's system is extremely important to the public safety community and that it is unique and operates differently than many other incumbent 900 MHz systems. This makes LCRA's system the very definition of a complex system that should be exempt from any mandatory relocation.

The Commission itself has also found that LCRA's system is complex because it granted LCRA an extended implementation period for its 900 MHz system pursuant to Section 90.629. Under Section 90.629(a), applicants requesting frequencies for either trunked or conventional operations may be authorized for an extended implementation period where the system will require longer than twelve months to construct and place into operation because of its "purpose, size, or complexity" or where the system is to "be part of a coordinated or integrated wide-area system that will require more than twelve months to plan, approve, fund, purchase, construct,

[18] EWA/PDV Reply Comments at 20, n. 63, WT Docket No. 17-200 (filed Nov. 1, 2017).

[19] *Id*. (emphasis added).

and place into operation."[20] By granting LCRA extended implementation authority for its 900 MHz system, the FCC found that LCRA met the requirements of Section 90.629(a) because of the purpose, size, and complexity of LCRA's system and because LCRA's system is part of a coordinated or integrated, wide-area system. This provides further support that LCRA's system should be considered a complex system excluded from any mandatory relocation that is adopted.

Complex narrowband systems that are excluded from any mandatory relocation must be able to continue to expand to meet future needs. LCRA continues to expand its utility facilities, including in rural areas where there often is a lack of reliable cellular coverage. LCRA's ability to provide coverage in areas where its utility operations are growing is essential for the safety of its employees and the general public. LCRA's service territory continues to experience significant growth and LCRA must keep pace with that growth to meet the long-term needs of its customers. LCRA provides a multitude of vital services – including water, power and public services – and is dedicated to providing those services in a safe, reliable, and economical manner. LCRA continues to expand its transmission system to increase its current capacity based on multiple factors, such as current and anticipated demand for LCRA's services, the need to maintain or build facilities or infrastructure to meet those demands, and compliance with applicable state and federal regulations.

The expansion of LCRA's transmission services – which necessitates expansion of radio coverage – is due to reasons beyond LCRA's control. As discussed herein, the expansion of LCRA's transmission system is driven by the high load growth – which is due to increases in oil and natural gas related demand – that has led to several transmission improvement projects to meet and support the needs of the Electric Reliability Council of Texas ("ERCOT").

[20] 47 C.F.R. § 90.629(a).

While the carve-out for complex systems would allow qualifying incumbent licensees to avoid being unduly burdened by the imposition of a mandatory relocation requirement, the Commission must also preserve the ability of complex system licensees to expand their systems. The Commission should therefore not adopt any prohibition or impediments to complex systems licensees from expanding their systems to meet their needs and those of their public safety and other shared users. In those areas with a complex narrowband system, the Commission should lift the freeze on 900 MHz license applications so that those complex system licensees can apply for new sites or modify existing sites based on the current allocation of channels for B/ILT narrowband operations, including any narrowband channels that would otherwise be located in the newly designated broadband segment. If complex systems that are excluded from relocation are limited to applying for new channels only in the compressed 2/2 MHz segment and precluded from obtaining channels in the proposed broadband segment, they would not be able to expand and would be forced to operate under a *de facto* mandatory relocation.

In addition, the carve-out for complex systems should not be subject to any timeline. Complex systems should be permanently excluded from any mandatory relocation obligation so long as such system is meeting the required threshold to qualify as a complex system and is operating. Finally, there should a prohibition on deploying a broadband system in any area with a complex narrowband system, unless the site-based complex system licensee consents to such deployment.

II. Realignment of the 900 MHz Band Would Not Support LCRA's Broadband Needs

The Commission asks commenters to describe "how the proposed realignment would or would not help PLMR users or other potential users meet their current and future broadband

needs."[21] The Commission further requests comment on "the extent to which our proposal would benefit narrowband users by helping them meet their broadband needs."[22]

The Commission acknowledges that the proposed 3/3 MHz broadband segment "is less than what the Commission has designated for other flexible-use broadband services in the past" and that it "would have relatively limited capacity and speed compared to existing nationwide and regional 4G networks . . . ."[23] It is, in fact, unclear what needs would actually be served by such a small broadband segment. The limited size, speed and capacity of the proposed 3/3 MHz broadband segment means that it would not provide a broadband option for the general public and would not further the Commission's goal of making additional spectrum available for 5G services.

Although there may be some limited use cases for utilities to operate in a 3/3 MHz broadband segment, the Commission's proposed realignment of the 900 MHz band will not help LCRA meet its current and future broadband needs. The Commission's proposal will not allow LCRA to deploy a private broadband network within the 900 MHz band under its own license, which would most directly meet the current and future needs of incumbent utilities. The best option that would help PLMR users meet their current and future broadband needs would be to allow them to become a broadband licensee and use the spectrum for their own private broadband networks. However, that is not what the Commission proposes. Instead, utilities would be dependent on a third-party provider.

[21] *900 MHz NPRM* at ¶ 12.

[22] *Id.* at ¶ 18.

[23] *Id.* at ¶ 12.

There is no guarantee or reasonable expectation that any third-party system would be designed or built with the reliability LCRA requires across the approximately 50,000 square mile territory LCRA currently serves. Any third party building a system from the ground up would be at a severe disadvantage trying to provide a similar service across the same territory. It is unreasonable to expect that a third-party broadband licensee would make the same investments in site reliability, transport, and power that LCRA has made in its system over the last few decades since it implemented its 900 MHz trunked radio.

Utilities that are interested in obtaining broadband services from a third-party already have other more attractive options than the limited bandwidth option proposed in the *900 MHz NPRM*. For example, FirstNet is offering utilities broadband services with higher bandwidth options and reliability than would be available under the proposed 900 MHz band realignment. Other entities have been offering spectrum to utilities that can be used for a broad range of applications including fixed data services. Therefore, the proposed realignment of the 900 MHz band would not meet utility broadband needs because there are already better broadband options available that utilities could pursue.

III. The Commission Should Only Adopt A Voluntary, Flexible Transition to the New Band Alignment

LCRA agrees that the Commission should rely on a market-driven, voluntary exchange process for relocation of the 900 MHz band.[24] LCRA opposes the use of mandatory relocation alternatives in conjunction with a voluntary exchange process, especially for complex systems.[25] For the numerous reasons discussed above, LCRA opposes any mandatory relocation mechanism that would force complex, site-based systems to relocate to a compressed 2/2 MHz narrowband

[24] *Id.* at 24.

[25] *Id.* at ¶¶ 41-55 (seeking comment on an auction of overlay licenses or an incentive auction).

segment. LCRA only supports a migration process that is truly voluntary in each market where a carve-out for complex systems is available.

The Commission acknowledges that a "transition of the 900 MHz band presents particular challenges given the unique characteristics, varied incumbent uses, and intensity of use in particular geographic areas."[26] Any realignment of the 900 MHz band must be voluntary and flexible in order to reflect these unique characteristics. A voluntary realignment must take into account the fact that the specific needs of incumbent site-based licensees may differ from those of geographic-based licensees, the extent to which site-based licensees and geographic licensees currently provide service varies in each geographic area, and the need for broadband in the 900 MHz band is not uniform throughout the country. The Commission should only implement a voluntary realignment process that gives incumbent site-based and geographic-based licensees in each individual market the flexibility to determine whether to realign the band and, if so, to negotiate the best way to realign the 900 MHz band. The Commission should let the marketplace decide whether there is a need for broadband services using the 900 MHz band in each market and if realignment is in the public interest.

The Commission proposes that the prospective broadband licensee would negotiate with site-based incumbents within the relevant county to clear them out of the broadband segment.[27] There may be situations where the Commission issues a broadband license for one county, but an adjacent county has not transitioned to the new band alignment. In those adjacent counties, there may be site-based incumbents that operate fixed sites located within 70 miles of the county border. Therefore, LCRA urges the Commission to make clear that the prospective broadband

[26] *Id.* at ¶ 24.

[27] *Id.* at ¶ 27.

licensee must protect site-based narrowband licensees operating in adjacent counties that have not transitioned to the new band plan with sites that are within 70 miles of the county border.

LCRA disagrees with the Commission's suggestion that geographically licensed SMR licensees "would be best positioned to facilitate the transactions necessary to effectuate relocation."[28] The Commission's proposal to limit eligibility for the broadband licenses to incumbents that hold 20 geographically licensed blocks of 900 MHz SMR spectrum is based on mistaken assumptions. The Commission's presumptions regarding the spectrum landscape are contrary to fact and not supported by the record.

The Commission contends that the 900 MHz band is heavily encumbered in certain areas of the country compared to other areas where no B/ILT channels are in use. LCRA notes that in addition to the specific areas with the greatest number of 900 MHz stations mentioned by the Commission, the 900 MHz spectrum is also heavily encumbered in the areas of Texas within LCRA's service territory. As discussed above, LCRA's 900 MHz radio system includes more than 65 radio tower sites that cover 61 counties and almost 50,000 square miles. LCRA's network is a narrowband 12.5 kHz system using hundreds of channels. LCRA holds licenses for over 180 distinct frequencies in the 900 MHz band and incorporates frequency reuse, so the 180 distinct frequencies are licensed and reused at multiple site locations.[29] As also discussed above, LCRA shares use of its system with public safety entities and other B/ILT users on a non-profit, cost-shared basis. The shared use of LCRA's system provides further confirmation that the 900 MHz band is heavily encumbered in Texas.

[28] *Id.* at ¶ 28.

[29] LCRA Comments at 4, RM-11738 (filed Jan. 12, 2015).

In contrast, the extent to which geographically licensed SMR incumbents currently provide land mobile services on a commercial basis throughout their geographic areas varies significantly. In many areas in Texas where all SMR geographic licenses are assigned, they are not all actively in use in the entire region and the SMR licensees do not appear to be providing commercial service throughout their entire licensed areas. In many cases, the actual SMR systems have not been substantially built out or may even be non-existent in the areas where utilities operate their site-based systems.

Thus, in certain areas, large site-based incumbents may actually be better positioned to effectuate the relocation to broadband operations. In those markets with a large, site-based licensee, the site-based incumbent operates system infrastructure today that meets the reliability and security requirements of utilities. As such, it would already be able to offer the infrastructure necessary to provide broadband services to utilities that best meets their needs regarding coverage, latency, and throughput. The site-based incumbent would not have to develop new systems, but would already have in place the network architecture to fully support critical communications systems and ensure the low latency and ultra-high reliability required by utilities.

LCRA therefore supports the Commission's alternative proposal that any licensee could use a combination of 900 MHz spectrum to be eligible for a new broadband licensee.[30] Site-based licensees should be eligible to obtain broadband licenses to deploy private-use broadband networks. As discussed above, the option that would most directly meet the current and future broadband needs of incumbent utilities is to allow utilities to deploy private broadband networks within the 900 MHz band under their own licenses, which they could share with other B/ILT

[30] *Id.* at ¶ 28.

users. If the Commission restricts eligibility to only allow geographic SMR licensees to obtain broadband licenses, it would unfairly deprive site-based licensees that have invested millions of dollars to build out their systems and that would likely be better positioned to deploy a broadband network of the opportunity to obtain broadband licenses. The Commission should refrain from attempting to pick winners and losers or predetermine which entities are best positioned to effectuate the transition to broadband. Limiting eligibility to geographic SMR licensees would also create an unfair windfall for those license holders because they would be getting broadband spectrum when they only paid for narrowband spectrum at auction.[31]

IV. The Commission Should Only Adopt Band Realignment Rules That Protect Narrowband Systems

The Commission seeks comment on several other issues relating to the proposed band realignment to create broadband licenses. As discussed above, it is imperative that the Commission exclude existing "complex" narrowband systems from any mandatory relocation. To the extent that the Commission proceeds with band realignment, LCRA hereby provides its comments regarding how best to structure the rules to protect incumbent complex narrowband systems.

LCRA opposes the Commission's proposal to designate the 900 MHz broadband service under Part 27 of the Commission's rules.[32] Instead, LCRA recommends that the Commission designate the 900 MHz broadband service under Part 90 and adopt rules for the 900 MHz broadband service that are similar to those included under Part 90, Subpart R, which governs the licensing and use of frequencies in portions of the 700 MHz band at 758-775 MHz and 788-805

[31] *Id.* at ¶ 34 (acknowledging that the Commission's approach "could substantially increase the prospective broadband licensee's spectrum value" and seeking "comment on the risks that a prospective broadband licensee would realize an undue windfall . . . .").

[32] *Id.* at ¶ 56.

MHz.[33] LCRA agrees that the 900 MHz broadband licenses should be regulated under Part 90 of the Commission's rules "so that broadband licenses and narrowband incumbents in the 900 MHz band would operating under a single set of rules."[34] Otherwise, if the Part 27 rules were to apply to the proposed broadband segment within the 900 MHz band, a dispute involving an issue not specifically identified for the 900 MHz band would default to rules specified for other commercial cellular bands. As a result, Part 27 rules for the broadband allocation would effectively place narrowband and broadband services in adjacent spectrum with potentially conflicting rules.

The closest example of a spectrum band where there are both broadband and narrowband technologies that co-exist is Part 90, Subpart R, which includes both the FirstNet spectrum at 758-769 MHz and 788-799 MHz and the narrowband channels allocated to public safety services in the 769-775 MHz and 799-805 MHz band. For those broadband and narrowband spectrum allocations, Subpart R of Part 90 accomplishes two important objectives. First, it codifies the regulations for both broadband and narrowband operations in that band. Second, it establishes the emission mask requirements that address the co-existence of noise limited (narrowband) and interference limited (broadband) systems.

Importantly, under Subpart R, the broadband and narrowband segments are separated by 1 MHz guard band at 768-769/798-799 MHz. The 768–769/798–799 MHz band is designated as a guard band under the Commission's rules to provide a buffer to minimize the potential for interference between the broadband and narrowband segments of the 700 MHz public safety band. The operational restrictions that attach to the 768-769 and 798-799 MHz guard band were

[33] See 47 C.F.R. §§ 90.521 through 90.559.

[34] *900 MHz NPRM* at ¶ 56.

adopted to mitigate interference between users in the broadband and narrowband segments of the public safety band.

In contrast, the proposed realignment of the 900 MHz band would create adjacent broadband and narrowband segments without any guard band to minimize the potential for interference. The Commission proposes to designate 897.5-900.5 MHz/936.5-939.5 MHz as the broadband segment, leaving two separate narrowband segments: a 1.5/1.5 MHz segment at 896-897.5/935-936.5 MHz below the broadband segment and a 0.5/0.5 MHz segment at 900.5-901/935.5-940 MHz above the broadband segment.[35] Without a guard band between the narrowband and broadband segments, the Commission's proposed band plan would essentially require that the narrowband segments be used as a guard band for the broadband segment. The Commission should instead follow the example in Part 90, Subpart R and adopt a guard band between the narrowband and broadband operations in the 900 MHz band if it proceeds with realignment to create broadband licenses. LCRA proposes that the new broadband segment be located at the lower segment of the band beginning at 896 MHz, with a guard band between the broadband and narrowband segments.

The Commission requests comment on the newly designated narrowband segments, including how the Commission should grant access to the narrowband segments and determine eligibility for narrowband segment licenses.[36] LCRA submits that eligibility for the newly designated narrowband segments should be limited to B/ILT entities. When the Commission adopted the prohibition in Section 90.617(c) on SMR systems using B/ILT channels, it correctly determined that allowing SMR use of B/ILT channels "could cause a scarcity of frequencies" for

[35] *Id.* at ¶ 15.

[36] *Id.* at ¶ 19.

PLMR services.[37] In 2008, the Commission retained the site-based licensing scheme for the 199 channels allocated to the B/ILT Pool in the 900 MHz band.[38] The Commission concluded that "dedicated spectrum allotted to B/ILT licensees at 900 MHz represents one of the few remaining opportunities for such licensees to obtain much-needed spectrum."[39] The Commission acknowledged "the vital communications role that 900 MHz B/ILT spectrum plays in enabling traditional B/ILT licensees to safeguard our nation's critical infrastructure industries."[40] The Commission further stated that 900 MHz B/ILT licensees "must ensure that they have access to communications pathways to meet the essential communications needs of such varied and critical industries as utilities, land transportation, manufacturers/industry, and petro-chemical."[41] Because the newly designated 2/2 MHz narrowband segments will be the only remaining 900 MHz spectrum available to site-based B/ILT entities, the Commission should preserve the spectrum for B/ILT use and should not allow SMR entities to use the few remaining channels to provide commercial services.

The Commission requests comment on an alternative realignment, such as realigning the entire band to create a 5/5 MHz broadband channel.[42] LCRA opposes redesignating the entire

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[37] *Amendment of Part 90 of the Commission's Rules to Facilitate Future Development of SMR Systems in the 800 MHz Frequency Band*, First Report and Order, Eight Report and Order, and Second Further Notice of Proposed Rulemaking, PR Docket No. 93-144, 11 FCC Rcd 1463, 1537 ¶ 141 (1995) ("*SMR Service Rules Order*").

[38] *Amendment of Part 90 of the Commission's Rules to Provide for Flexible Use of the 896-901 MHz and 935-940 MHz Band Allotted to the Business and Industrial Land Transportation Pool*, Report and Order, WT Docket No. 05-62, 23 FCC Rcd 15856 (2008) ("*900 MHz Report and Order*").

[39] *Id*. at 15863 ¶ 12.

[40] *Id*. at 15864 ¶ 13.

[41] *Id.*

[42] *900 MHz NPRM* at ¶ 20.

900 MHz band to create a 5/5 MHz broadband option. The 900 MHz band remains of vital importance to LCRA's operations. If the 900 MHz band within LCRA's service territory were realigned into a 5/5 MHz configuration for broadband operations, LCRA's mission critical communications and its utility operations would suffer significant disruption. This would have a devastating impact on the public safety entities and numerous other entities that rely on LCRA's 900 MHz system. Even if LCRA could find alternative spectrum bands where it could relocate to along with its shared users, it would still cause significant disruption at exorbitant costs.

If the Commission realigns the 900 MHz band to create a broadband option, LCRA supports geographic area licensing for the broadband segment based on counties.[43] LCRA concurs that county-based licensing for the broadband segment will promote spectrum efficiency and will better align with the needs of electric utilities and other B/ILT entities. LCRA also believes that county-based licensing will best facilitate a carve-out of complex systems from any mandatory relocation of incumbent users. By adopting county-based licensing, the Commission can still carve out complex systems while making it easier for broadband to be deployed in the areas without incumbent complex systems. Potential broadband applicants will be in a better position to deploy targeted broadband systems in more narrowly tailored markets with less disruption to utilities. County-based licensing will also support the Commission's goals of ensuring that the broadband spectrum is intensely and efficiently utilized, that the spectrum does not lie fallow, and that broadband licensees provide service in a timely manner.[44] The Commission will be able to more accurately evaluate deployment of broadband services at a more granular, county-by-county level.

[43] *Id.* at ¶ 22-23.

[44] *Id.* at ¶ 60 (discussing performance requirements for the broadband licensee).

LCRA opposes larger geographic areas for broadband licenses because it would not align with the needs of utilities and would complicate the relocation process. LCRA's 900 MHz site-based system operates within portions of three Major Trading Areas ("MTAs") – MTA007 (Dallas-Fort Worth), MTA014 (Houston), and MTA033 (San Antonio). If the Commission were to adopt a larger geographical licensing regime based on MTAs or a similar regional approach, a broadband licensee wanting to deploy a broadband system in the downtown metro areas within those MTAs would have to negotiate to relocate LCRA even though LCRA's system does not cover all of those metro areas. The Commission should avoid larger geographical licensing in order to avoid unnecessary conflict between a potential broadband licensee and LCRA's neighboring complex system in the rural counties. Such a conflict would delay potential broadband and could complicate the carve-out of complex systems.

The Commission also seeks comment on whether a requirement that incumbents transition from the current 12.5 kilohertz bandwidth to 6.25 kilohertz bandwidth would facilitate transactions to effectuate relocation.[45] LCRA strongly opposes any such requirement because the costs associated with narrowbanding from 12.5 kHz to 6.25 kHz would be extraordinary and it would be an extremely lengthy and time-consuming process. Instead of facilitating the transition to the new band plan, it would instead unnecessarily complicate the voluntary negotiation process, increase the costs of relocation, and delay the transition.

V. Conclusion

LCRA's primary concerns are that its existing 900 MHz narrowband communications system can continue to operate at its current levels of reliability in its service territory, is protected against harmful interference from any broadband operations allowed in the band and

[45] *Id.* at ¶ 36.

can expand to meet growing utility coverage and capacity requirements. For the reasons stated herein, complex systems, such as those operated by LCRA, cannot be accommodated in the proposed 2/2 MHz narrowband segments and must be excluded from any mandatory relocation. Furthermore, any relocation and transition to broadband services must be truly voluntary and flexible.

WHEREFORE, THE PREMISES CONSIDERED, Lower Colorado River Authority respectfully requests the Commission to take action in this docket consistent with the views expressed herein.

Respectfully submitted,

LOWER COLORADO RIVER AUTHORITY

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